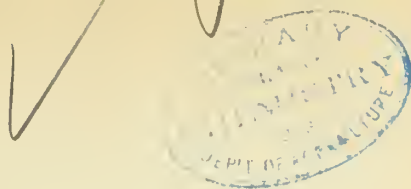


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# Maine Agricultural Experiment Station

BULLETIN No. 119.

OCTOBER, 1905.

FOOD INSPECTION.

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This bulletin contains the report upon samples of baking powders and different kinds of vinegar collected in 1905.

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Requests for bulletins should be addressed to the  
AGRICULTURAL EXPERIMENT STATION,  
Orono, Maine.

# MAINE AGRICULTURAL EXPERIMENT STATION ORONO, MAINE.

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## FOOD INSPECTION.

CHAS. D. WOODS, Director.

L. H. MERRILL, Chemist in charge of food analysis.

The law regulating the sale and analysis of foods, enacted by the legislature of Maine in 1905, apparently contemplates two things; the proper and truthful branding of all articles of food, and the exclusion from the markets of deleterious food materials. The law does not seek to prevent the sale of any article of wholesome food, but in case a food material is other than it appears to be, it "shall be plainly labeled, branded or tagged so as to show the exact character thereof." Bulletin 116 of this Station contains the full text of the law and food standards so far as they have been fixed for Maine. Copies of this bulletin may be had on application to the Station.

## BAKING POWDERS.

As baking powders are the only food material mentioned by name in the law, it was decided to include them in the first trip of the inspector in order to see in how far the powders offered for sale in the State conformed to the requirements of the law, which demands that such powders "shall be plainly labeled so as to show the acid salt or salts contained therein." As is pointed out on page 139 beyond, all three classes of baking powder leave objectionable residues in the resulting breads, and there is great dispute as to which are the least objectionable. The food law of this State does not attempt to in any way answer the question as to which is best. They are all put on the same footing of correctly stating the source of the acid constituent. A baking powder is adulterated under the law only when the label does not truthfully name the kind of acid salt it contains; when it is falsely labeled in any particular; when it contains useless, inert foreign matter, mineral or otherwise.

There are practically three classes of baking powders on the market, differing chiefly in the source of the acid.

Tartrate powders, in which the acid is either cream of tartar (bi-tartrate of soda) or tartaric acid.

Phosphate powders, in which calcium or sodium acid phosphate is the acid constituent.

Alum powders, in which the acid constituent is the sulphate of aluminum as it occurs in the various alums.

There are of course many complex baking powders on the market which are made up of mixtures of two or more of the three classes above named. Of these mixtures, phosphate-alum powders are the most common. Indeed, phosphate-alum powders are far more common than straight alum powders.

Whether the acid principle be tartaric acid, calcium phosphate or aluminum sulphate, there is always a residual product which is undesirable as a food.\* Cream of tartar powders leave a residue of Rochelle salt, the active principle of Seidlitz powders; tartaric acid powders leave a residue of sodium tartrate; phosphate powders leave a residue of sodium and calcium phosphates; and alum powders leave a residue of ammonium, potassium or sodium sulphate, in accordance with the kind of alum used. The residues of the phosphate-alum powders differ somewhat from those of either alum or phosphate powders and vary with the proportion of the different acid constituents used. When the ingredients are properly proportioned in the baking powder, neither alum or alum phosphate powders leave any considerable amount of alum in the resulting bread or cake.

The per cent of available carbonic acid gas furnished by the different classes of baking powders is, according to Wiley,† as follows:

Cream of tartar baking powder, 12 per cent available carbonic acid gas.

Phosphate baking powder, 13.0 per cent available carbonic acid gas.

Alum baking powder, 8.1 per cent available carbonic acid gas.

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\* Many people seem to believe that the chemicals used in baking powders completely or nearly completely disappear. Cream of tartar baking powders belong to one of the best classes and yet, according to Wiley, the amount of Rochelle salt formed as a residue from a teaspoonful and a half of a cream of tartar baking powder equals that of one Seidlitz powder.

† The figures are quoted from Bul. 13 of Div. of Chemistry, U. S. Dept. of Agr.

Phosphate-alum powder, 10.4 per cent available carbonic gas.

The alum powders would require a half more than the tartrate or phosphate powders to produce the same leavening effect. There are however very few straight alum powders on the market. Because of the greater leavening effect of the mixed powders and the supposed less harmful residues, nearly all the alum now used is in the phosphate-alum powders.

The samples here collected and reported upon have not been tested for strength, but merely for correctness of labeling. Many of the less common brands were found by correspondence with the manufacturers to be three or more years old. Naturally such powders would not be nearly as effective as leavening agents as when they were fresher. As soon as it is possible to do so with the limited funds at our disposal, new samples will be tested for strength. The manufacturers so far as heard from are ready and anxious to conform to the law. The makers of mixed powders are apparently as desirous of selling their goods on what they claim to be their merits as are the makers of tartrate or phosphate powders.

The list of the brands collected and comments follow.

#### CREAM OF TARTAR AND TARTARIC ACID POWDERS.

7009. *Cleveland Superior Baking Powder*, made by Cleveland Baking Powder Co., N. Y. Purchased from A. A. Gilbert, Orono, March, 1905. In tin can. Price per can 25 cents. Cost of powder 3.1 cents per ounce. "A pure cream of tartar powder." "Free from alum, ammonia, lime or other adulterant." The acid salt is correctly named.

7012. *Cream Baking Powder*, made by Price Baking Powder Company, New York and Chicago. Purchased from W. L. Wilson & Co., Portland, April, 1905. In tin. Price per can 30 cents. Cost per ounce 1.8 cents. "A pure cream of tartar powder." "Free from aluminum, ammonia, lime or any other adulterant." The acid salt is correctly named.

7017. *Mrs. Lincoln's Baking Powder*, made by Mrs. Lincoln Baking Powder Company, Boston, Mass. Purchased from F. E. Plummer, Portland, April, 1905. In tin. Price per can 15 cents. Cost per ounce, 4 cents. The label states it to be a cream of tartar baking powder. The acid salt is correctly named.

7033. *Plume Baking Powder*, made by Plume Baking Powder Co., Malden, Mass. Purchased from Andrews & Harrigan, Biddeford, April, 1905. In tin. Price per can 40 cents. Cost per ounce 2.5 cents. The label states that it is a cream of tartar and tartaric acid powder. The acid salt is correctly named.

7022. *Royal Baking Powder*, made by Royal Baking Powder Company, New Jersey. Purchased from J. C. Norton & Co., Bangor, April, 1905. In tin. Price per can 25 cents. Cost per ounce 3.1 cents. The label states it to be a cream of tartar and tartaric acid powder. The acid salt is correctly named.

7021. *Schilling's Best Baking Powder*, made by A. Schilling & Co., San Francisco, Calif. Purchased from Morrill and Ross, Portland, April, 1905. In tin. Price per can 25 cents. Cost per ounce 1.8 cents. The acid salt was not named on the label. The company state that these were old goods and that all goods now sent out are labeled cream of tartar baking powder. The acid salt is as claimed.

7020. *Shaw's Baking Powder*, Geo. C. Shaw and Co., Portland. Purchased from Geo. C. Shaw & Co., Portland, April, 1905. In tin. Price per can 43 cents. Cost per ounce 2.6 cents. The package bears two certificates of analyses which state it to be a cream of tartar baking powder. The acid salt is correctly named.

7011. *Slade's Congress Yeast Powder*, made by D. & L. Slade Co., Boston, Mass. Purchased from W. L. Wilson and Co., Portland, April, 1905. In tin. Price per can 35 cents. Cost per ounce 2.1 cents. "Cream of tartar baking powder." The acid salt is correctly named.

7023. *Solar Baking Powder*, made by Fidelity Manufacturing Co., N. Y. Purchased from A. A. Gilbert, Orono, April, 1905. In tin. Price per can 25 cents. Cost per ounce 2.6 cents. "Made of absolutely pure cream of tartar." The acid salt is correctly named.

7024. *Wilde's Baking Powder*, made by Samuel Wilde & Sons, N. Y. Purchased from A. A. Gilbert, Orono, April, 1905. In tin. Price per can 50 cents. Cost per ounce 2.6 cents. No statement on label as to nature of acid salt, and the company when written to did not reply. It is a cream of tartar powder.



## PHOSPHATE POWDERS.

7010. *Boston Baking Powder*, made by Boston Baking Powder Co., Boston, Mass. Purchased from W. L. Wilson & Co., Portland, April, 1905. In tin. Price per can 10 cents. Cost per ounce 1.3 cents. The label did not state the nature of the acid salt. The company write that all goods hereafter sent into the State will bear their formula. It is a straight phosphate powder.

7015. *Horsford's Self Raising Bread Preparation*, made by Rumford Chemical Works, Providence, R. I. Purchased from W. L. Wilson & Co., Portland, April, 1905. In paper. Price per package 20 cents. Cost per ounce 1.7 cents. The label states that it is a phosphate powder. The acid salt is correctly named.

7008. *Rumford Baking Powder*, made by Rumford Chemical Works, Providence, R. I. Purchased from A. A. Gilbert, Orono, March, 1905. In tin. Price per can 25 cents. Cost per ounce 3.1 cents. "A strictly pure phosphate powder." The acid salt is correctly named.

## ALUM POWDER.

7031. *J. C. Grant's Bon Bon Baking Powder*, made by J. C. Grant Chemical Co., East St. Louis, Ill. Purchased from John F. Hannaway, Biddeford, April, 1905. In tin. Price per can 10 cents. Cost per ounce .7 cents. The label states that the powder is made from "double sulphate of sodium and aluminum." The claim that it is an alum powder is correct.

## PHOSPHATE-ALUM POWDERS.

7030. *Biskit Baking Powder*, made by Biskit Baking Powder Company, Boston, Mass. Purchased from J. L. Sullivan and Sons, Biddeford, April, 1905. In tin. Price per can 10 cents. Cost per ounce 2.5 cents. The label states that the powder contains calcium phosphate and alumina sulphate. The acid salts are correctly named.

7013. *Davis O. K. Baking Powder*, made by R. B. Davis, New York, and Hoboken, N. J. Purchased from F. E. Plummer, Portland, April, 1905. In tin. Price per can 20 cents. Cost per ounce 2.6 cents. The label on this can did not state the acid

salt. On the labels now used this powder is stated to contain acid phosphate and sodium aluminic sulphate. The acid salts are correctly named on the new label.

7034. *Diamond Baking Powder*, made by J. Smith Brockway & Co., Boston. Purchased from S. L. Somerville, Houlton, April, 1905. In tin. Price per can 50 cents. Cost per ounce 3.2 cents. The label did not state the nature of the acid salt. The labels now used state that the powder contains phosphate and basic alumina sulphate. The acid salts are correctly named on the new label.

7014. *Grand Union Tea Company Baking Powder*, made by the Grand Union Tea Company, Brooklyn, N. Y. Purchased from the Grand Union Tea Company, Portland, April, 1905. In tin. Price per can 50 cents. Cost per ounce 2.8 cents. The label did not state the nature of the acid salts. The label now in use states that the powder contains acid phosphate and calcined aluminum sulphate. The acid salts are correctly named on the new label.

7016. *I. C. Baking Powder*, made by Jacques Manufacturing Company, Chicago, New York and Kansas City. Purchased from Morrill and Ross, Portland, April, 1905. In tin. Price per can 25 cents. Cost per ounce 0.9 cents. The label did not state the acid salt. The label now used states that the powder contains calcium acid phosphate and basic aluminum sulphate. The acid salts are correctly named on the new label.

7032. *Pilgrim Baking Powder*, made by Pilgrim Baking Powder Co., Boston, Mass. Obtained from Murphy Bros., Biddeford, April, 1905. In tin. Price not given. The Pilgrim Baking Powder is no longer made. The Puritan Baking Powder Company are their successors and make an alum-phosphate powder. The label on this powder states that it contains acid phosphate and basic alumina sulphate.

7019. *Reliable Baking Powder*, put up for Boston Tea and Butter Co., Portland. Purchased from Boston Tea and Butter Co., Portland, April, 1905. In tin. Price per can 25 cents. Cost per ounce 2.8 cents. The label did not state the nature of the acid salt. The company write that all goods hereafter will be labeled in accordance with the requirements of the law. It is an acid phosphate and alum powder.

## TARTRATE-PHOSPHATE POWDERS.

7018. *Purity Baking Powder*, made by Purity Baking Powder Company, Boston. Purchased from Boston Tea and Butter Store, Portland, April, 1905. In tin. Price per can 30 cents. Cost per ounce 1.7 cents. The label states that the powder contains cream of tartar and phosphate of calcium. The acid salts are correctly named.

7035. *The Pure Baking Powder*, made by the Pure Baking Powder Company, Albany, N. Y. Purchased from Fisher and Crocker, Bangor, April, 1905. In tin. Price per can 10 cents. Cost per ounce 3.2 cents. The label states it to be a pure cream of tartar baking powder. This is false as it also contains acid phosphate.

## TARTRATE-ALUM-ACID-PHOSPHATE POWDER.

7238. *Superb Baking Powder*, made by Hudson Valley Preserving Co., Glens Falls, N. Y. Purchased from W. J. Elbridge, Foxcroft. In tin. Price per can 8 cents. Cost per ounce 2 cents. "An absolutely pure compound being wholly composed of chemically pure cream of tartar and bicarbonate of soda with the addition of a little starch or flour." The label is false in that while the powder contains some tartaric acid it also carries alum and acid phosphate.

## VINEGARS.

When alcohol is placed under favorable conditions it takes up oxygen from the air and is converted into acetic acid,—the acid that gives the sour taste to vinegar. Whatever the source of the vinegar, and however it is made, the acetic acid is the same.

When a fruit juice, such as cider, is allowed to ferment, its sugar is changed into alcohol by natural yeast-like ferments that are in the juices. Under the influence of another organism that is always present in old vinegar and in "mother of vinegar," this alcohol is changed into acetic acid. In the old process of vinegar making, which is still followed by many farmers, the apple cider is put into barrels with open bungs and kept in a warm cellar or other suitable place until both the alcoholic and acetic fermentations have taken place. This is a slow process and two or three years are needed to complete it. The addition

of old vinegar or mother of vinegar hastens the process somewhat. While some vinegar is still made in this way, the quick process, used first for malt and distilled vinegars, is now generally employed by manufacturers of cider vinegar. In this process the fermented cider or other alcoholic solution is made to pass slowly through beech shavings which have been previously saturated with old vinegar, and at the same time a current of air is forced through the shavings. The shavings are used to increase the surface exposed to the air. Beech is commonly employed because it is an odorless and tasteless wood. Under proper conditions two or three days are sufficient to complete the process.

Besides acetic acid, vinegar always contains more or less of other substances which vary widely with the source from which the vinegar was made. It is because of these foreign matters, characteristic of vinegar of the same kind, that it is possible for the chemist to quite readily distinguish one variety of vinegar from another. The sour taste of a vinegar is due to its acetic acid, the other flavors are due to foreign matters in solution. The standards which have been adopted take these other foreign matters into account.

The following standards for vinegars were adopted and published as directed by law in May, 1905.

#### VINEGAR STANDARDS OF MAINE.

1. *Vinegar, cider vinegar, or apple vinegar* is the product made by the alcoholic and subsequent acetous fermentations of the juice of apples, is lævo-rotatory, and contains not less than four (4) grams of acetic acid, not less than one and six-tenths (1.6) grams of apple solids, and not less than twenty-five hundredths (0.25) gram of apple ash in one hundred (100) cubic centimeters. The water-soluble ash from one hundred (100) cubic centimeters of the vinegar requires not less than thirty (30) cubic centimeters of decinormal acid to neutralize the acidity and contains not less than ten (10) milligrams of phosphoric acid ( $P_2O_5$ ).

2. *Wine vinegar or grape vinegar* is the product made by the alcoholic and subsequent acetous fermentations of the juice of grapes and contains, in one hundred (100) cubic centimeters, not less than four (4) grams of acetic acid, not less than one and

four-tenths (1.4) grams of grape solids, and not less than thirteen hundredths (0.13) gram of grape ash.

3. *Malt vinegar* is the product made by the alcoholic and subsequent acetous fermentations, without distillation, of an infusion of barley malt or cereals whose starch has been converted by malt, and is dextro-rotatory and contains, in one hundred (100) cubic centimeters, not less than four (4) grams of acetic acid, not less than two (2) grams of solids, and not less than two-tenths (0.2) gram of ash. The water-soluble ash from one hundred (100) cubic centimeters of the vinegar requires not less than four (4) cubic centimeters of decinormal acid to neutralize its alkalinity and contains not less than nine (9) milligrams of phosphoric acid ( $P_2O_5$ ).

4. *Sugar vinegar* is the product made by the alcoholic and subsequent acetous fermentations of solutions of a sugar, sirup, molasses, or refiners' sirup, and contains, in one hundred (100) cubic centimeters, not less than four (4) grams of acetic acid.

5. *Glucose vinegar* is the product made by the alcoholic and subsequent acetous fermentations of solutions of starch sugar, glucose, or glucose sirup, is dextro-rotatory, and contains, in one hundred (100) cubic centimeters, not less than four (4) grams of acetic acid.

6. *Spirit vinegar, distilled vinegar, grain vinegar* is the product made by the acetous fermentations of dilute distilled alcohol and contains, in one hundred (100) cubic centimeters, not less than four (4) grams of acetic acid.

#### INTERPRETATION OF THE LAW.

While there have been no court decisions in Maine, the executive officer will, until he is better informed, be guided by the following statements in the enforcement of the law concerning vinegar.

The standards above named, adopted under section 5 of the law, are part of the pure food law.

The word vinegar, as defined in section 1 of the standards, unless otherwise qualified, always means cider vinegar. To sell anything else than cider vinegar when vinegar is asked for, is prohibited by the law.

No vinegar whether cider or otherwise, carrying less than 4 per cent of acetic acid, can legally be sold unless the per cent of acid is stated on the package.



The use of the trade term "white wine vinegar" defined in section 2 of the standards is an adulteration unless the vinegar thus designated is made from grapes. The vinegars commonly called white wine vinegars should be labeled white vinegar, distilled; pickling vinegar, distilled; spirit vinegar; grain vinegar; or some such term that clearly states the nature of the goods.

Distilled vinegars colored so as to resemble cider vinegar must carry a statement showing that they are colored. In case caramel (burnt sugar) is the coloring matter, the exact nature of the coloring matter need not be stated. Thus "distilled vinegar, colored" would come within the requirements of the law.

In case a dealer furnishes a customer with vinegar other than cider vinegar, or one that carries less than 4 per cent acetic acid, he must so notify the purchaser. Failure to do so is a violation of the law, and bills therefor are uncollectable (section 8 of law).

#### RESULT OF THE INSPECTION.

Samples of vinegar were taken from the stock of retail dealers in several cities and large towns in the State in the months of May and August, 1905. These vinegars were examined for total acidity, volatile acids, total solids and ash. The nature of the solids and ash were not studied, except in a few special instances. For this reason it may be that an occasional sample of vinegar has been passed as a straight cider vinegar when it was adulterated. Ordinary adulterations would be detected by the methods employed by us. A skillful adulteration might have escaped detection.

It is gratifying to note that while there were low grade imitation vinegars on the market, no harmful ingredients were found. The fraud in every case was upon the pocket-book rather than upon the health of the consumer.

It is likewise gratifying that the makers and handlers of vinegar in the State are in apparent sympathy with the purpose of the law and desire to meet its requirements.

The results of the analyses are given in the table which follows.

*Description and results of analyses of samples of different kinds of vinegars collected in Maine in the spring and fall of 1905.*

Number.	Description*. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
		cts.	%	%	%	%
<b>CIDER VINEGARS.</b>						
7059	A. H. Black, West Sidney. W. P. Stewart & Co., Waterville, April, 1905.....	25	5.86	5.74	1.76	.40
7289	A. H. Black, West Sidney. Edson Locke, Augusta, August, 1905.....	25	4.75	4.70	1.83	.38
7295	A. H. Black, West Sidney. G. E. Barrows, Waterville, August, 1905 .....	25	4.53	4.37	1.85	.39
7261	Eastern Tea & Grocery Co., Bath, August, 1905. The barrel was labeled "pure cider vinegar" but did not carry the name of the maker. It appears to be a dilute cider vinegar, such as would result from adding a third or more water to a good vinegar.....	20	3.03	2.96	.82	.31
7046	John Cassidy Co., Bangor. S. H. Robinson & Son, Bangor, April, 1905.....	20	3.93	3.86	1.95	.30
7242	John Cassidy Co., Bangor. Robert Hickson & Son, Bangor, August, 1905 .....	20	4.28	4.15	2.23	.43
7244	John Cassidy Co., Bangor. R. B. Blair, Brewer, August, 1905.....	25	4.35	4.20	2.28	.43
7271	E. Clifford & Co., Portland. Nealley & Miller, Lewiston, August, 1905.....	20	3.88	3.78	1.98	.34
7036	Chas. F. Dearth, Foxcroft. Fred T. Hall & Co., Bangor, April, 1905 .....	30	6.05	5.82	2.74	.32
7042	Chas. F. Dearth, Foxcroft. J. C. Norton & Co., Bangor, April, 1905.....	25	5.88	5.73	2.80	.33
7053	Chas. F. Dearth, Foxcroft. W. S. Hamm, Foxcroft, April, 1905 .....	20	5.67	5.52	2.68	.34
7247	Chas. F. Dearth, Foxcroft. Harlow Bros., Brewer, August, 1905 .....	25	4.88	4.74	1.87	.32
7074	A. B. Donald. A. P. Conant & Co., Lewiston, April, 1905. Probably a pure cider vinegar, though rather poorly made .....	20	3.64	3.60	2.89	.48
7281	J. B. Donald, Portland. G. E. Whitehouse, Brunswick, August, 1905.....	20	4.43	4.16	3.18	.29
7047	Duffy Cider Co., Rochester, N. Y. F. H. Drummond, Bangor, May, 1905.....	25	4.10	4.00	2.21	.31
7293	Duffy Cider Co., Rochester, N. Y. Percival Bros., Augusta, August, 1905 .....	25	4.00	3.94	2.30	.35
7055	E. G. Flanders, Sangerville. Warren & Dyer, Dover, May, 1905. Probably a poorly made straight elder vinegar.....	18	3.47	3.20	3.69	.35

\* When two names are given, the first is that of the manufacturer. The date is that of taking the sample.

*Descriptions and analyses of vinegars collected in 1905.*

Number.	Description.. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
7277	Fuller & Holmes Co., Augusta. Webber & Hewett, Augusta, August, 1905. Probably a rather poorly made cider vinegar.....	cts. 25	% 3.39	% 3.36	% 1.71	% .34
7041	"Gold Medal." Haynes-Piper Co., Boston. J. C. Norton & Co., Bangor, May, 1905.....	25	4.98	4.98	2.35	.36
7241	Holly Mills, Genesee Fruit Co., Holly, N. Y. Gallagher Bros., Bangor, August, 1905 .....	25	4.22	4.04	3.41	.47
7037	H. J. Heinz Co., Pittsburg, Pa. James H. Snow & Co., Bangor, May, 1905.....	25	5.18	5.13	2.37	.30
7256	H. J. Heinz Co., Pittsburg, Pa. J. H. Snow & Co., Bangor, August, 1905.....	25	5.08	5.00	2.45	.42
7257	H. J. Heinz Co., Pittsburg, Pa. Walter S. Russell, Bath, August, 1905.....	25	5.40	5.38	2.35	.36
7282	H. J. Heinz Co., Pittsburg, Pa. H. T. Mason, Brunswick, August, 1905 .....	25	4.60	4.44	2.40	.33
7286	H. J. Heinz Co., Pittsburg, Pa. H. E. Emmons, Brunswick, August, 1905.....	25	5.18	5.14	2.54	.41
7291	F. L. Hewins, East Winthrop. E. W. Church, Augusta, August, 1905. Probably an imperfectly fermented cider vinegar...	25	3.08	2.92	2.95	.45
7060	W. S. Hunnewell, China. Geo. A. Kennison, Waterville, May, 1905 .....	25	5.77	5.60	2.46	.35
7297	W. S. Hunnewell, China. Geo. A. Kennison, Waterville, August, 1905 .....	25	4.80	4.78	2.13	.33
7058	J. A. Jenkins, Lambs Corner. H. C. Haskell, Waterville, May, 1905 .....	25	4.67	4.56	1.92	.37
7294	J. A. Jenkins, Lambs Corner. E. M. Jepson, Waterville, August, 1905.....	25	4.90	4.90	1.78	.35
7296	J. A. Jenkins, Lambs Corner. C. E. Mathews, Waterville, August, 1905.....	25	4.82	4.82	1.87	.37
7265	Pettingill, Limington. Wm. Milliken & Co., Portland, August, 1905.....	25	4.74	4.56	2.09	.44
7288	H. S. Melcher Co., Portland. E. M. Alexander, Brunswick, August, 1905.....	20	3.93	3.84	1.98	.34
7054	Daniel Page, Dover. Fred Palmer, Dover, May, 1905 .....	20	6.12	4.76	7.26	.52
7068	E. D. Pettingill Bros., Portland. Morrill & Ross, Portland, May, 1905.....	25	4.63	4.38	2.83	.32
7270	E. L. Pettingill Sons Co., Portland. Seannell & Roche, Lewiston, August, 1905.....	20	4.57	4.34	2.48	.27
7064	J. F. Pillsbury. Geo. C. Shaw Co., Portland, May, 1905.....	25	5.65	5.50	3.15	.48
7268	Steadman, Hawkes & Co., Portland. Ames & Merrill, Lewiston, August, 1905 .....	20	4.23	4.22	1.68	.25



*Descriptions and analyses of vinegars collected in 1905.*

Number.	Description. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
		cts.	%	%	%	%
7075	Maker unknown. Bowker & Scott, Lewiston, May, 1905.....	20	4.85	4.78	1.29	.24
7069	Twitchell-Champlin Co., Portland. F. E. Plumer, Portland, May, 1905.....	25	4.73	4.68	1.80	.29
7262	"Hatchet brand." Twitchell-Champlin Co., Portland. A. F. Williams, Bath, August, 1905.....	20	5.03	4.96	1.82	.29
7287	"Hatchet brand." Twitchell-Champlin Co., Portland C. A. Pierce & Son, Brunswick, August, 1905.....	24	4.85	4.84	1.81	.29
7079	Fred Vickery, East Auburn. John Callahan, Auburn, May, 1905.....	20	3.97	3.82	2.52	.40
7273	J. P. Vickery, East Auburn. C. H. Libby & Co., Lewiston, August, 1905. If a cider vinegar it has apparently been reduced with water.....	20	3.70	3.64	1.23	.12
7063	"Domestic vinegar." Maker unknown. W. L. Wilson & Co., Portland, May, 1905.....	20	6.09	6.08	1.88	.36
7070	"Domestic vinegar." Maker unknown. A. M. Hanniford, Portland, May, 1905. Either a very poorly fermented or, what is more probable, a watered vinegar.....	18	2.30	2.20	1.79	.37
7266	"Domestic vinegar." Maker unknown. John W. Deering & Son, Portland, August, 1905. A rather poorly fermented cider vinegar.....	25	3.50	3.48	2.27	.25
7299	"Marvel brand." Maker's name illegible on barrel. Chas. Pomeleau, Waterville, August, 1905.....	25	4.47	4.44	1.65	.28
MALT VINEGARS.						
7057	H. J. Heinz Co., Pittsburg, Pa. Warren & Dyer, Dover, May, 1905.....	25	5.10	4.76	1.89	.24
7066	H. J. Heinz Co., Pittsburg, Pa. Geo. C. Shaw Co., Portland, May, 1905.....	60	6.13	5.79	2.84	.31
7067	H. J. Heinz Co., Pittsburg, Pa. F. H. Verrill, Portland, May, 1905.....	25	4.73	4.28	2.24	.23
7245	H. J. Heinz Co., Pittsburg, Pa. Harlow Bros., Brewer, August, 1905.....	25	4.70	4.37	1.97	.22
7259	H. J. Heinz Co., Pittsburg, Pa. Walter S. Russell, Bath, August, 1905.....	25	4.87	4.52	2.16	.30
7264	H. J. Heinz Co., Pittsburg, Pa. Geo. C. Shaw & Co., Portland, August, 1905.....	60	5.38	5.04	2.65	.22
7274	H. J. Heinz Co., Pittsburg, Pa. Atwood Market Co., Lewiston, August, 1905.....	25	4.76	4.32	2.60	.43
7292	H. J. Heinz Co., Pittsburg, Pa. G. W. Wadleigh, Augusta, August, 1905.....	30	4.80	4.48	2.03	.29
DISTILLED VINEGARS. NOT COLORED.						
7040	E. E. Clifford & Co., Portland. Brennen & Curran, Bangor, May, 1905. Branded and sold as white wine vinegar.....	25	3.75	3.31	.10	.63

*Descriptions and analyses of vinegars collected in 1905.*

Number.	Description. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
		cts.	%	%	%	%
7072	E. E. Clifford & Co., Portland. Spear & Webster, Lewiston, May, 1905. Branded and sold as white wine vinegar .....	20	3.58	3.56	.21	.13
7249	E. E. Clifford & Co., Portland. Brennan & Curran, Bangor, August, 1905. Branded and sold as white wine vinegar .....	25	3.78	3.70	.11	.03
7251	E. E. Clifford & Co., Portland. F. S. Jones, Bangor, August, 1905. Branded and sold as white wine vinegar .....	25	3.12	3.07	.36	.24
7290	Fleischmann's Superior White Wine Vinegar. Merrill Bros., Augusta, August, 1905. Branded and sold as white wine vinegar .....	25	3.30	3.28	.18	.04
7313	J. B. Donnell Co., Portland. Jensen & Blom, Portland, September, 1905. Branded and sold as white wine vinegar .....	30	3.10	3.10	.21	.08
7038	H. J. Heinz Co., Pittsburg, Pa. James H. Snow & Co., Bangor, May, 1905. This and all of Heinz' white vinegars are branded pickling vinegars distilled .....	30	5.26	5.26	.19	.04
7048	H. J. Heinz Co., Pittsburg, Pa. F. H. Drummond, Bangor, May, 1905.....	30	6.50	6.50	.22	.04
7056	H. J. Heinz Co., Pittsburg, Pa. Warren & Dyer, Dover, May, 1905.....	20	5.28	5.28	.33	.06
7065	H. J. Heinz Co., Pittsburg, Pa. Geo. C. Shaw Co., Portland, May, 1905.....	30	5.50	5.48	.22	.05
7071	H. J. Heinz Co., Pittsburg, Pa. Spear & Webster, Lewiston, May, 1905 .....	30	4.98	4.98	.25	.06
7253	H. J. Heinz Co., Pittsburg, Pa. F. H. Drummond, Bangor, August, 1905.....	30	5.75	5.70	.24	.04
7258	H. J. Heinz Co., Pittsburg, Pa. Walter S. Russell, Bath, August, 1905 .....	30	5.33	5.20	.16	.04
7272	H. J. Heinz Co., Pittsburg, Pa. Nealley and Miller, Lewiston, August, 1905. Branded white vinegar distilled. Sold for white wine vinegar .....	20	4.46	4.46	.18	.04
7278	H. J. Heinz Co., Pittsburg, Pa. Webber & Hewett, Augusta, August, 1905 .....	25	5.22	5.18	.18	.04
7279	H. J. Heinz Co., Pittsburg, Pa. H. L. & W. E. Chase, Bath, August, 1905 .....	35	5.18	5.16	.17	.04
7283	H. J. Heinz Co., Pittsburg, Pa. H. T. Nason, Brunswick, August, 1905.....	25	5.05	4.98	.31	.04
7285	H. J. Heinz Co., Pittsburg, Pa. "Howard White Vinegar." H. E. Emmons, Bruns- wick, August, 1905 .....	25	4.00	4.00	.20	.05
7269	"White Wine." This is the only inscription on the barrel. The dealer obtained it from E. L. Pettin- gill Sons Co., Portland. Ames & Merrill, Lewiston, August, 1905.....	20	4.13	4.12	.16	.04

*Descriptions and analyses of vinegars collected in 1905.*

Number.	Description. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
		cts.	%	%	%	%
7051	Pine Hill Farm. Staples & Griffin, Bangor, May, 1905.....	20	2.85	2.84	.43	.08
7248	White vinegar "T. R. S. & Co., Bangor." Harlow Bros., Brewer, August, 1905 .....	25	2.58	2.54	.19	.03
7076	Maker unknown. Bowker & Scott, Lewiston, May, 1905. It was branded as white wine vinegar.....	20	4.86	4.84	.23	.08
7044	Maker unknown. F. L. Frank & Co., Bangor, May, 1905 .....	30	2.48	2.46	.28	.08
7275	Maker unknown. Bowker & Scott, Lewiston, August, 1905. Branded and sold as pure white wine vinegar .....	20	4.28	4.28	.19	.05
DISTILLED VINEGARS COLORED IN IMITATION OF CIDER VINEGAR						
7043	John Cassidy Co., Bangor. A. E. Baker, Bangor, May, 1905.....	25	3.08	3.06	.20	.03
7039	E. E. Clifford & Co., Portland. Brennan & Curran, Bangor, May, 1905. Warranted pure cider vinegar .....	25	3.85	3.82	.20	.04
7052	E. E. Clifford & Co., Portland. W. J. Eldridge, Foxcroft. "Guaranteed Mass. stan- dard." May, 1905.....	20	3.75	3.68	.31	.07
7061	E. E. Clifford & Co., Portland. Whitcomb & Cannon, Waterville, May, 1905. "Pure cider vinegar" .....	25	3.78	3.78	.27	.14
7073	E. E. Clifford & Co., Portland. Spear & Webster, Lewiston, May, 1905. "Pure cider vinegar" .....	18	3.81	3.80	.30	.05
7252	E. E. Clifford & Co., Portland. F. S. Jones, Bangor, August, 1905. "Pure cider vinegar, guaranteed Mass. standard"...	20	4.25	4.19	.37	.25
7260	E. E. Clifford & Co., Portland. W. H. Swett, Bath, August, 1905. "Fine pure old XXXX vinegar".....	25	3.55	3.50	.43	.09
7284	E. E. Clifford & Co., Portland. W. Hamilton, Brunswick, August, 1905. "Fine pure old XXX vinegar".....	12	3.12	3.08	.28	.07
7250	E. E. Clifford & Co., Portland. Brennan & Curran, Bangor, August, 1905. "Pure Golden Russet vinegar".....	25	3.88	3.80	.28	.03
7255	E. E. Clifford & Co., Portland. Staples & Griffin, Bangor, August, 1905. "Pure Golden Russet vinegar".....	....	3.75	3.70	.18	.05
7314	E. E. Clifford & Co., Portland. Miss C. R. Garnet, Portland, by E. L. Cobb, Jr., milk inspector for Portland, September, 1905. "Golden Russet" .....	....	4.45	4.48	.22	.05

*Descriptions and analyses of vinegars collected in 1905.*

Number.	Description. Remarks.	Cost per gallon.	Total acids.	Volatile acids.	Total solids.	Ash.
		cts.	%	%	%	%
7300	Conant, Patrick & Co., Portland. Dumas & Vigue, Waterville, August, 1905. "Pure Perfection Vinegar." Sold for cider vinegar.	20	3.10	3.05	.38	.04
7276	F. G. Davis & Co., Lewiston. Bowker & Scott, Lewiston, August, 1905. "Fine Pure Old XXXX Vinegar".....	20	3.20	3.16	.20	.16
7062	J. B. Donnell Co., Portland. John B. Johnson, Portland, May, 1905 .....	25	2.93	2.92	.28	.13
7312	J. B. Donnell Co., Portland. C. A. Rounds, Portland, by E. L. Cobb, Jr., milk in- spector for Portland, September, 1905. Labeled "Star brand vinegar." .....		2.43	2.42	.23	.03
7315	J. B. Donnell Co., Portland. C. S. Johnson, Portland, by E. L. Cobb, Jr., milk in- spector for Portland, September, 1905. It was labeled "Star brand vinegar" .....		2.13	2.12	.19	.03
7316	J. B. Donnell Co., Portland. Chas. Mahoney, Portland, by E. L. Cobb, Jr., milk inspector for Portland, September, 1905.....		3.35	3.28	.20	.03
7045	Pine Hill Farm. F. L. Frank & Co., Bangor, May, 1905. A rather doubtful vinegar. It may be a cider vine- gar watered.....	20	3.53	3.44	.96	.14
7050	Pine Hill Farm. Staples & Griffin, Bangor, May, 1905 .....	20	3.20	3.18	.28	.04
7246	T. R. Savage & Co., Bangor. Harlow Bros., Brewer, August, 1905. "Pure vinegar".....	15	3.46	3.42	.37	.05
7298	"S, Bangor." Toulouse & Soucier, Waterville, August, 1905.....	25	3.12	3.12	.32	.06
7078	Steadman & Hawks. Olfene & Holmes, Auburn, May, 1905. This was guaranteed to be pure cider vinegar .....	15	3.29	3.28	.37	.08
7243	Thurston & Kingsbury, Bangor. N. H. Hall, Brewer, August, 1905. "X L Pure pickling vinegar" .....	20	3.43	3.30	.46	.06
7254	Geo. I. Wescott & Son, Bangor. T. J. Daley & Co., Bangor, August, 1905. "XXX vinegar"....	20	2.93	2.80	.39	.07
7317	C. A. Weston, Portland. S. F. Wood, Portland, by E. L. Cobb, Jr., milk in- spector for Portland, September, 1905. "Solar brand".....		2.05	2.02	.38	.09
7049	Maker unknown. Fisher & Crocker, Bangor, May, 1905. "Strictly pure vinegar".....	20	2.95	2.96	.23	.03
7077	Maker unknown. E. B. Bray, Auburn, May, 1905.....	20	2.65	2.64	.19	.04



## FREE ANALYSIS OF FEEDS, FOODS, FERTILIZERS, AND SEEDS.

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The Station takes pains to obtain for analysis samples of all brands of fertilizers and feeding stuffs coming under the law. It also draws samples of agricultural seeds and foods in the hands of dealers. The co-operation of dealers and consumers is, however, essential for the full and timely protection of their interests.

*Foods.* Dealers and consumers are invited to send by pre-paid express original and unbroken packages of food materials on sale in Maine of whose purity they are for any reasons suspicious. As prompt free analysis will be made of such samples as circumstances will allow.

*Feeding Stuffs.* The Station will promptly analyze samples of feeding stuffs sold in Maine taken in accordance with directions which will be furnished on application. The results will be reported without charge to interested parties. This applies to dealers and consumers alike.

*Commercial Fertilizers.* It is difficult to draw accurate samples of commercial fertilizers. On this account it is only in rare instances that the Station undertakes analyses of fertilizers other than the samples collected by its representatives. In case there is special reason for an examination, the Station invites correspondence on the subject.

*Agricultural Seeds.* Samples of agricultural seeds on sale in Maine, taken in accordance with directions which can be obtained on application to the Station, will be examined as promptly as possible and the results reported free of charge.

In all cases samples should be accompanied by a full description of the goods, including the name and address of the dealer and the sender. Small samples other than liquids can be forwarded by mail. Others should be forwarded by express, charges prepaid. Both mail and express matter should be addressed to the

AGRICULTURAL EXPERIMENT STATION,  
Orono, Maine.





